

### **REMARKS**

This responds to the Office Action dated March 9, 2005.

Claim 1 is amended, claim 4 is canceled, and new claims 62 is added; as a result, claims 1-3, 5, 6, 8-24 and 62 are now pending in this application.

It is believed that no new matter is introduced and that support for the amendment of claim 1 and new claim 62 appears in the specification, including, for example, the portions at page 22, lines 6 *et. seq.*

### **§102 Rejection of the Claims**

#### ***Quate***

Claims 1-3, 5, 6, 8-11 and 21-23 were rejected under 35 U.S.C. § 102(e) as being anticipated by Quate et al. (U.S. 6,436,647).

Applicant respectfully traverses the rejection and submits that *prima facie* anticipation has not been established on the basis of Quate. In particular, Applicant is unable to find, in Quate, a teaching or disclosure of a photodetector responsive to light reflected by said resonant structure and light reflected by the substrate, wherein said photodetector provides an output corresponding to a resonant frequency shift of said structure, said shift corresponding to a change in the mass, as recited in the claim.

Furthermore, Applicant is unable to find, in the cited document, a teaching or disclosure of all recited elements in the particular arrangement as recited in the claim. For example, Applicant is unable to find, in Quate, a teaching or disclosure of a resonant structure . . . wherein said structure resonates under ambient conditions . . . and a photodetector . . . wherein said photodetector provides an output corresponding to a resonant frequency shift of said structure, said shift corresponding to a change in the mass, as recited in claim 1. In contrast, Quate refers to “deflection” and “deflection movement” (column 5, lines 1-5) using “standard AFM techniques” (column 8, lines 9-10) and does not clearly teach or disclose measuring frequency shift under ambient conditions.

Applicant submits that claim 12 of Quate does not clearly teach or enable the recited subject matter. Furthermore, Quate does not appear to provide a teaching of a method for

detecting a resonant frequency shift. Those claims dependent from base claim 1 are also believed to be in condition for allowance since each recites additional elements beyond that of the base claim. For at least these reasons, Applicant respectfully traverses and requests reconsideration and allowance of claims 1-3, 5, 6, 8-11 and 21-23.

### *Grey*

Claims 1-3, 5, 6 and 8-23 were rejected under 35 U.S.C. § 102(e) as being anticipation by Grey et al. (U.S. 20030154771).

Applicant respectfully traverses the rejection and submits that *prima facie* anticipation has not been established on the basis of Grey. Applicant is unable to find, in the cited document, a teaching or disclosure of all recited elements in the particular arrangement as recited in the claim. For example, Applicant is unable to find, in Grey, a teaching or disclosure of a photodetector responsive to light reflected by said resonant structure and light reflected by the substrate, wherein said photodetector provides an output corresponding to a resonant frequency shift of said structure, said shift corresponding to a change in the mass, as recited in claim 1.

Furthermore, Applicant is unable to find, in Grey, a teaching or disclosure of a resonant structure . . . wherein said structure resonates under ambient conditions . . . and a photodetector . . . wherein said photodetector provides an output corresponding to a resonant frequency shift of said structure, said shift corresponding to a change in the mass, as recited in claim 1. In contrast, Grey (at the cited portion) refers to deflection and appears silent as to resonance under ambient conditions. Indeed, Applicant notes that sections 16 and 106 of Grey teach away from the use of optical detection.

Those claims dependent from base claim 1 are also believed to be in condition for allowance since each recites additional elements beyond that of the base claim. For at least these reasons, Applicant respectfully traverses and requests reconsideration and allowance of claims 1-3, 5, 6 and 8-23.

### §103 Rejection of the Claims

Claims 14-19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Quate et al.

Applicant respectfully traverses the rejection and submits that *prima facie* obviousness has not been established. In particular, Applicant is unable to find, in the proposed combination, a teaching or suggestion of a photodetector responsive to light reflected by said resonant structure and light reflected by the substrate, wherein said photodetector provides an output corresponding to a resonant frequency shift of said structure, said shift corresponding to a change in the mass.

Reconsideration and allowance of claims 14-19 is respectfully requested.

Claim 24 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Quate et al. or Grey et al. in view of Chan et al. (U.S. 6,124,765).

Applicant respectfully traverses the rejection and submits that *prima facie* obviousness has not been established. In addition to the foregoing, Applicant submits that the proposed combination with Chan does not cure the shortcomings noted above.

Reconsideration and allowance of claim 24 is respectfully requested.

**CONCLUSION**

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (612) 373-6911 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

HAROLD G. CRAIGHEAD ET AL.

By their Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.

P.O. Box 2938

Minneapolis, MN 55402

(612) 373-6911

Date July 8, 2005

By

David W. Black

Reg. No. 42,331

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop AF, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 8 day of July, 2005.

Dawn M. Poole

Name

Dawn M. Poole

Signature